Amendments to the Specification:

Please replace paragraph [0062] with the following paragraph.

[0062] In order to prevent false alarms, a passive optical system must be capable of discrimination between objects of interest such as human intruders and other objects. These objects can be detected by discriminating between various objects in the field-of-view of the system on several bases. First, the system may be configured to respond only to objects located at a given range within the area to be monitored. As will be explained below, a range gate may be set so that only objects captured within the range gate are recorded on the system; all other objects are ignored. Discrimination may also occur on the basis of the object's height and its velocity. Because velocity is a vector quantity as explained above, discrimination may also occur on the basis of the algebraic sign of the velocity vector. The system employs the same setup as illustrated in FIG. 1. However for intrusion detection, it is best to mount the system at a height h_S above the ground as shown generally in FIG. 18. Having the system pointed downward at an obtuse angle to ground reference will provide the range gate capability required for object discrimination. A schematic close-up of this configuration is shown in FIG. 16 in which a lens [[100]] <u>200</u> is mounted at a height h_S above a horizontal surface [[102]] <u>202</u> which may be the ground or a floor but is some horizontal reference plane. The lens has a focal length f and a light-sensitive device, such as a charge coupled device or equivalent [[104]] <u>204</u>, is placed at the focal length. The light-sensitive device [[104]] <u>204</u> includes a plurality of lines of pixels [[106]] <u>206</u>. A pair of lenses such as lens [[100]] <u>200</u>, which may be associated with video cameras 14 and 16, are placed at a downward looking angle a predetermined distance apart. Usually, the baseline distance between the two lenses will be parallel to the horizontal surface [[102]] <u>202</u>. This is not absolutely necessary as the geometry can be corrected if the baseline between the lenses is not perfectly horizontal. Each lens includes a light-sensitive device [[104]] <u>204</u>. This may be a charge coupled device or any similar device having photosensitive elements as described above.

Please replace paragraph [0063] with the following paragraph.

[0063] Referring to FIG. 19, the light-sensitive device [[104]] 204 includes lines [[106]] 206 comprised of individual pixel elements [[108]] 208. While FIG. 16 shows the use of a light-sensitive device [[104]] 204 for each of the lenses represented by lens [[100]] 200 in FIG. 16, it should be understood that a single light-sensitive device may be used if desired. Light from each of the lenses can be routed to a single light-sensitive device using mirrors and the like. However, simplicity of construction makes it more practical to use a single light-sensitive device for each lens in the dual lens array.

Please replace paragraph [0064] with the following paragraph.

[0064] The light-sensitive device, typically a charge-coupled device or a CMOS imager chip, is in the focal plane of the lens; f is the focal length of the lens [[100]] 200. The light-sensitive device [[104]] 204 is shown for clarity of illustration as having only a few lines of pixels [[106]] 206. However, an actual chip of this type would have hundreds of lines. From FIG. 16, it can be seen that for the particular orientation chosen, that is, the angle at which the lens is pointed into the space to be monitored, each line [[106]] 206 on the chip "sees" out to a different maximum range. For example, line L is sensitive to objects at range R_L but no further. The topmost line of the chip, line [[110]] 210, would define the minimum range whereas ordinarily the bottom line [[112]] 212 would define the maximum range. The maximum and minimum ranges are determined by the focal length f of the lens, the height h_S of the system above the ground [[102]] 202, and the elevation angle α.

Please replace paragraph [0067] with the following paragraph.

[0067] Line L can see both object 1 and object 3 but only object 3 is within the line L range gate. Line L+M can also see object 1. In addition, line L+M can see object 2 but only object 2 is in the line L+M range gate. Thus, if object 1 were an object blown by the wind or a bird, it would be seen by many of the video lines in the light-sensitive device but it would not cause a false alarm because the range, when calculated, falls outside the parameters for the range gate of either

line L or line L+M. The way in which the objects 1, 2 and 3 might be seen by the light-sensitive device [[104]] 204 is illustrated in FIG. 19. It should be noted that in order to perform object detection within a predetermined range gate, line pair correlation is performed for only a limited plurality of pixel lines [[106]] 206 of the light-sensitive device [[104]] 204. In effect, the light-sensitive device may be separated into pixel line "zones" which represent various range gates. Thus within an area to be monitored, range gates may be set at both distant and near ranges as determined by the needs of the user.

Please replace paragraph [0068] with the following paragraph.

[0068] FIGs. 20A-20D illustrate the method by which the range gate is selected by the system controller of FIG. 11. FIGs. 20A-20D are a flowchart diagram that illustrates how the range gate is set. Once the system is installed within an area, a number of parameters must be set. These parameters may be measured and entered into the system through a computer keyboard. At block [[100]] 300, object height, sensor height, focal length, sensor depression angle, the video camera chip vertical active dimension and the number of the video lines in the chip are all entered into the system. Next, a nominal maximum range is selected at block [[102]] 302. This range will depend upon the dimensions of the area to be monitored. At block [[104]] 304, the angle Φ_L is computed, which is the angle between video line-of-sight and a local vertical reference (which is 90° to local horizontal). At block [[106]] 306, the angle is computed between the sensor line-of-sight and the line-of-sight that will be seen by a pixel line at the maximum range. Note that the identity of this pixel line is not yet known; it will be computed. Next, the linear distance or displacement from the center of the chip to the line which sees out to the maximum range is computed in block [[108]] 308. From this computation, the line number can then be computed in block [[110]] 310. Once the line number is known, the vertical dimension of the pixel can be computed as shown in block [[112]] 312. From this information, the angular field of view of any particular line can be determined in block [[114]] 314. Referring to FIG. 20C, now the ranges at the horizontal reference intercepts of any particular line may be computed. These parameters are shown graphically in FIG. 23. In block [[118]] 318, the system

next selects a line number for intrusion detection and in block [[120]] 320, with the information previously known for each line number, the maximum dimension of the range gate is set.

Please replace paragraph [0070] with the following paragraph.

[0070] Referring to FIGs. 25A and 25B, a block diagram is shown which illustrates how the system of FIG. 11 operates to detect intruders within a secured area. Referring to FIG. 25A, after power-up and start at block [[200]] 400, the system makes a range measurement (block [[202]] 402). If the range detected is greater than the range gate maximum setting (block [[204]] 404), the range measurement is discarded (block [[206]] 406). The program loops back and another range measurement is made. If the range is not greater than the maximum setting in block [[204]] 404, the measurement is compared with the range gate minimum setting (block [[208]] 408). If the measurement is less than the minimum setting, the measurement is discarded (block [[206]] 406). If the measurement is not greater than the minimum setting, the measurement is saved and the time is noted (block [[210]] 410). This process continues until a sufficient number of measurements are collected (block [[212]] 412). Once a sufficient number of data points have been collected, a linear regression of range versus time is computed (block [[214]] 414). This computation yields the velocity of an object of interest that is found within the range gate. The system then determines whether the velocity is positive or negative (block [[216]] 416). If negative, the object is marked as one that is receding (block [[218]] 418). If positive, the object is approaching as determined in block [[220]] 420. The system controller of FIG. 11 may contain preset alarm criteria. This provides still further discrimination among objects of potential interest. For example, objects that are moving either too fast (*i.e.*, birds or falling objects) or objects that move too slowly may be eliminated. In block [[222]] 422, a comparison is made between the objects velocity and preset alarm criteria. If the velocity criteria is met (block [[224]] 424), an alarm is activated (block [[226]] 426). On the other hand, if the object velocity does not meet the preset alarm criteria, it may be discarded (block [[228]] 428).